

C L A I M S

1. A method of manufacturing a carcass structure for
tyres, in particular for two-wheeled vehicles, comprising
5 the steps of:
- preparing strip-like sections (13, 14) each comprising
longitudinal and parallel thread-like elements (15) at
least partly coated with at least one layer of raw
elastomer material;
 - 10 - making at least one carcass ply (3) by laying down and
circumferentially distributing said strip-like sections
(13, 14) on a toroidal support, each of said strip-like
sections (13, 14) extending in a U-shaped configuration
15 around the cross-section outline of the toroidal support
(11), to define two side portions (13a, 14a) mutually
spaced apart in an axial direction, and a crown portion
(13b, 14b) extending at a radially outer position
between the side portions (13a, 14a);
 - applying annular reinforcing structures (4) to an area
20 close to inner circumferential edges of said at least one
carcass ply (3),
characterized in that accomplishment of each annular
reinforcing structure (4) comprises the steps of:
 - laying down at least one elongated element in
25 concentric coils (21a) so as to form an annular anchoring
insert (21) substantially in the form of a crown;
 - forming at least one filling body (22) of raw elastomer
material;
 - joining the filling body (22) to said annular
30 anchoring insert (21).
2. A method as claimed in claim 1, wherein accomplishment
of said carcass ply (3) comprises the steps of:
- laying down on said toroidal support (11), a first
35 series of said strip-like sections (13) circumferentially
distributed with a circumferential pitch corresponding to

a multiple of the width of the strip-like sections (13, 14);

- applying said annular reinforcing structures (4) against end flaps of said strip-like sections (13) belonging to the first series;

- laying down on the toroidal support (11), at least one second series of said strip-like sections (14) each extending in a U-shaped conformation around the cross-section outline of the toroidal support (11), between two consecutive sections (13) of the first series to define said carcass ply (3) therewith, each of the sections (14) of the second series having end flaps overlapping the respective annular reinforcing structures (4) at an axially opposite position relative to the end flaps of the sections of the first series (13).

3. A method as claimed in claim 2, wherein the crown portions (13b, 14b) of the strip-like sections (13, 14) are consecutively disposed in side by side relationship along the circumferential extension of the toroidal support (11).

4. A method as claimed in claim 3, wherein the side portions (13a) of each strip-like section (13) belonging to the first series are each partly covered with a side portion (14a) of at least one circumferentially consecutive section (14) belonging to the second series, at a stretch included between a radially outer edge of the annular reinforcing structure (4) and a transition region between said side portions (13a, 14a) and said crown portions (13b, 14b).

5. A method as claimed in claim 4, wherein covering of the side portions (13a) of each strip-like section (13) belonging to the first series progressively decreases starting from a maximum value close to the outer

circumferential edge of each annular reinforcing structure (4) until a zero value at the transition regions between said side portions (13a, 14a) and crown portions (13b, 14b).

5

6. A method as claimed in claim 1, wherein the side portions (13a, 14a) of said strip-like sections (13, 14) are caused to radially converge in the direction of the geometric rotation axis of the toroidal support (11).

10

7. A method as claimed in claim 1, further comprising a step of defining regions of increased width close to the inner circumferential edges of the carcass structure (2).

15

8. A method as claimed in claim 7, wherein preparation of said strip-like sections (13, 14) takes place by cutting actions sequentially carried out on at least one continuous strip-like element (2a) incorporating said thread-like elements (15) into said layer of raw elastomer material (18), said step of defining regions of increased width being carried out on the continuous strip-like element (2a) before execution of the cutting action.

20

9. A method as claimed in claim 1, wherein said elongated element is laid down directly in contact with the carcass ply (3).

25

10. A method as claimed in claim 2, wherein said elongated element is laid down directly against the end flaps of the strip-like sections (13) belonging to the first series, so as to form the annular anchoring insert directly (21) in contact with the strip-like sections themselves.

30

35

11. A method as claimed in claim 1, wherein said filling

body (22) is located at a radially outer position relative to said annular anchoring insert (21).

12. A method as claimed in claim 1, wherein said filling
5 body (22) is formed by laying down a continuous strip of elastomer material directly against the previously-laid-down annular anchoring insert (21), so that said joining step is carried out concurrently with formation of the filling body (22).

10

13. A carcass structure for tyres, in particular for two-wheeled vehicles, comprising:

3034097309
- at least one carcass ply (3) comprising strip-like sections (13, 14) circumferentially distributed around
15 a geometric rotation axis, and each comprising at least two thread-like elements (15) disposed longitudinally and parallelly of each other and at least partly coated with at least one layer of raw elastomer material (18), each of said strip-like sections (13, 14) extending in a
20 substantially U-shaped conformation around the cross-section outline of the carcass structure, to define two side portions (13a, 14a) spaced apart from each other in an axial direction, and a crown portion (13b, 14b) extending at a radially outer position between the side
25 portions (13a, 14a);

characterized in that it further comprises a pair of annular reinforcing structures (4) engaged at an area close to respective inner circumferential edges of the carcass ply (3) and each comprising:

30 - an annular anchoring insert (21) substantially in the form of a crown disposed coaxially with the carcass structure (2) and adjacent to an inner circumferential edge of the carcass ply (3), said annular anchoring insert (21) being formed of at least one elongated
35 element extending in concentric coils (21a);

- a filling body (22) of raw elastomer material joined to

said annular anchoring insert (21).

14. A carcass structure as claimed in claim 13, wherein said carcass ply (3) comprises:

- 5 - a first and a second series of strip-like sections (13, 14) disposed in a mutually alternating sequence along the circumferential extension of the carcass structure (2),
- each of said annular reinforcing structures (4) having
10 an axially inner side turned towards end flaps of the sections belonging to the first series (13) and an axially outer side turned towards end flaps of the sections belonging to the second series (14).

15. A carcass structure as claimed in claim 14, wherein the crown portions (13b, 14b) belonging to the sections of the first and second series (13, 14) respectively are disposed in mutual side by side relationship along the circumferential extension of the carcass structure (2).

16. A carcass structure as claimed in claim 15, wherein the side portions (13a) of each strip-like section (13) belonging to the first series are each partly covered with a side portion (14a) of at least one adjacent
25 strip-like section (14) belonging to the second series, at a stretch included between a radially outer edge of the annular reinforcing structure (4) and a transition region between said side portions (13a, 14a) and said crown portions (13b, 14b).

17. A carcass structure as claimed in claim 16, wherein covering of the side portions (13a) of each strip-like section (13) belonging to the first series progressively decreases starting from a maximum value at a region close
35 to the outer circumferential edge of each annular reinforcing structure (4) until a zero value at the

transition regions between said side portions (13a, 14a) and said crown portions (13b, 14b).

18. A carcass structure as claimed in claim 13, wherein
5 the side portions (13a, 14a) of said strip-like sections (13, 14) radially converge in the direction of the geometric rotation axis of the carcass structure (2).

19. A carcass structure as claimed in claim 14, wherein
10 the individual strip-like sections (13, 14) belonging to one of said first and second series respectively are advantageously disposed with a circumferential distribution pitch corresponding to a multiple of the width of the strip-like sections themselves.

20. A carcass structure as claimed in claim 13, wherein
15 each strip-like section (13, 14) has regions of increased width at an area close to the inner circumferential edges of the carcass structure (2).

21. A carcass structure as claimed in claim 20, wherein
20 the thread-like elements (15) included in each strip-like section (13, 14) are mutually spaced apart at said regions of increased width.

22. A carcass structure as claimed in claim 13, wherein
25 each of said strip-like sections (13, 14) has a width included between 3 mm and 15 mm.

23. A carcass structure as claimed in claim 13, wherein
30 each of said strip-like sections (13, 14) comprises three to eight thread-like elements (15).

24. A carcass structure as claimed in claim 13, wherein
35 said thread-like elements (15) are disposed in the respective strip-like sections (13, 14) according to a

mutual distance between centres which is not lower than 1.5 times the diameter of the thread-like elements themselves.

5 25. A carcass structure as claimed in claim 13, wherein said annular anchoring insert (21) has a single series of radially-superposed concentric coils.

10 26. A carcass structure as claimed in claim 13, wherein said filling body (22) radially extends from said annular anchoring insert (21), tapering away therefrom.

15 27. A carcass structure as claimed in claim 13, wherein the ratio between the radial extension of the annular anchoring insert (21) and said filling body (22) is included between 0.5 and 2.5.

20 28. A carcass structure as claimed in claim 13, wherein said filling body (22) of elastomer material has a hardness included between 48° and 55° Shore D at 23°C.

25 29. A tyre, in particular for two-wheeled vehicles, having a carcass structure made in accordance with one or more of the preceding claims.

25

add a₁
add B₂
add E₃